

Особенности авторизации и аутентификации в ORACLE APEX

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2017

Определения

- Аутентификация - процедура проверки подлинности пользовательских данных (например, имени и пароля).
Авторизация - это процесс предоставления прав на выполнение каких-либо действий (например, просмотр страницы).

Способы аутентификации в ORACLE APEX

- Без аутентификации (встроенная функциональность)
- Аутентификация пользователей БД(встроенная возможность, аутентификацию проходит владелец схемы БД, в которой хранится приложение объекты базы)
- Аутентификация пользователей APEX(встроенная функциональность, аутентификацию проходят пользователи, зарегистрированные в APEX в WORKSPACE соответствующего приложения)
- CUSTOM –аутентификация(процедура аутентификации должна быть описана разработчиком в соответствии с определенными правилами)

Когда устанавливается способ аутентификации (при создании приложения)?

The screenshot shows the Oracle APEX 'Create an Application' wizard in the 'Attributes' step. The progress bar at the top indicates that the first three steps are completed (green checkmarks) and the current step is active (blue circle). The 'Authentication Scheme' dropdown menu is open, showing three options: 'Application Express Accounts' (highlighted), 'Database Account', and 'No Authentication'. Other configuration options include 'Language', 'User Language Preference Derived From', 'Date Format', 'Date Time Format', 'Timestamp Format', and 'Timestamp Time Zone Format'.

ORACLE Application Express Application Builder SQL Workshop Team Development Packaged Apps

Create Application

Create an Application

Attributes

Authentication Scheme: Application Express Accounts, Database Account, No Authentication

Language: [dropdown]

User Language Preference Derived From: Application Primary Language

Date Format: [dropdown]

Date Time Format: [dropdown]

Timestamp Format: [dropdown]

Timestamp Time Zone Format: [dropdown]

Как можно изменить способ аутентификации для созданного приложения?

- Edit Application Properties -> Security ->
- Authentication -> Define Authentication Schema

Просмотрим список существующих схем и создадим новую (CREATE)

ORACLE Application Express Application Builder SQL Workshop Team Development Packaged Apps

Application 81750 > Shared Components > Authentication Schemes

Authentication Schemes Subscription History

Search: Go Actions Reset Create >

Name	Scheme Type	Subscribed From	Subscribers
Application Express Authentication - Current	Application Express Accounts		

1 - 1

An Authentication Scheme is saved configuration you can apply to your application.
To turn off authentication you must create and make current a **No Authentication** scheme.

n.grafeeva@spbu.ru grafeeva en Copyright © 1999, 2015, Oracle. All rights reserved. Application Express 5.0.1.00.06

Выберем источник...

The screenshot shows the Oracle APEX interface for creating an authentication scheme. The breadcrumb trail is: Application 81750 > Shared Components > Authentication Schemes > Create. The main heading is "Create Authentication Scheme". A progress bar indicates the current step is "Method".

When you create a new authentication scheme, you have several options. Most let you reuse implementations that already exist in your application or in other applications within your workspace. There are even some pretested schemes you can copy to get you up and running immediately.

Create Scheme: **Based on a pre-configured scheme from the gallery** ?
 As a copy of an existing authentication scheme

> **Information**

Buttons: Cancel (left), Next > (right)

Не забудем дать имя НОВОЙ СХЕМЕ...

The screenshot shows the Oracle APEX interface for creating or editing an authentication scheme. The breadcrumb trail is: Application 81750 > Shared Components > Authentication Schemes > Create / Edit. The page title is 'Authentication Scheme'. There are 'Cancel' and 'Create Authentication Scheme' buttons. The 'Name' field is labeled with a red asterisk and contains the text 'OPEN_DOOR'. The 'Scheme Type' field is also labeled with a red asterisk and has a dropdown menu open. The dropdown menu lists the following options: 'Application Express Accounts' (highlighted), 'Custom', 'Database Accounts', 'HTTP Header Variable', 'LDAP Directory', 'No Authentication (using DAD)', 'Open Door Credentials', and 'Oracle Application Server Single Sign-On'. On the right side, there is a help section titled 'Authentication Scheme' with explanatory text and a 'Return to page' link at the bottom.

Authentication Scheme

Authentication is the process of establishing each user's identity before they can access your application. It may require a user to enter a user name and password or could involve the use of digital certificates or a secure key. Use this page to create or edit Authentication Schemes and set the one which your application is using. The current Authentication Scheme determines how your application identifies and verifies the end user. Depending on the selected Authentication Scheme Type, you can use various settings and program hooks to fine-tune your application's authentication.

Return to page

Установим текущую схему аутентификации (схем у приложения может быть много, но текущая (current) может быть только одна)

The screenshot shows the Oracle Application Express interface for managing authentication schemes. A green notification banner at the top states: "Action processed. Authentication scheme activated as current authentication scheme." Below this, the "Authentication Schemes" page is displayed with tabs for "Authentication Schemes", "Subscription", and "History". A search bar and "Go" button are present. A table lists the schemes:

Name	Scheme Type	Subscribed From	Subscribers
Application Express Authentication	Application Express Accounts		
No_Auth - Current	No Authentication (using DAD)		
OPEN_DOOR	Open Door Credentials		

At the bottom right of the table, it indicates "1 - 3". The footer of the page includes the user "n.grafeeva@spbu.ru", the name "grafeeva", the language "en", the copyright notice "Copyright © 1999, 2015, Oracle. All rights reserved.", and the version "Application Express 5.0.1.00.06".

Создадим группы пользователей (пригодятся потом при авторизации) Administration->Manage Users and Groups

The screenshot shows the Oracle Application Express interface for creating a user group. The browser address bar indicates the URL: `https://apex.oracle.com/pls/apex/f?p=4350:54:15089337183797::NO:54::`. The page title is "Create/Edit User Group".

The navigation menu includes: ORACLE Application Express, Application Builder, SQL Workshop, Team Development, and Packaged Apps. The current page is "Manage Users and Groups" > "User Group".

The main content area is titled "User Groups" and contains a "Cancel" button and a "Create Group" button. Below this is a tabbed interface with "Show All", "Group Details", and "Group Grants". The "Group Details" tab is active, showing the following fields:

- Group Name:** ADMIN
- Description:** Администраторы

The description field has a character count of "14 of 4000".

A help sidebar on the right provides information about user groups:

User Groups

You can create user groups to restrict access to various parts of an application. However, user groups are not portable over different authentication schemes. User groups are primarily useful when using Application Express workspace authentication.

To create a new user group, identify the group name and an optional description.

Первая группа (Admin) создана

The screenshot displays the Oracle Application Express interface for managing users and groups. The browser address bar shows the URL: `https://apex.oracle.com/pls/apex/f?p=4350:53:15089337183797::NO::`. The page title is "Manage Users and Groups".

The navigation menu includes: ORACLE Application Express, Application Builder, SQL Workshop, Team Development, and Packaged Apps. The current page is "Manage Users and Groups", with sub-tabs for "Users", "Groups", and "Group Assignments".

The main content area shows a search bar with a magnifying glass icon and a "Go" button. Below the search bar, there is a list of user groups. One group is visible: "ADMIN", represented by a person icon. The page indicates "1 - 1" items.

On the right side, there is a "User Groups" sidebar with the following text: "User groups enable you to restrict access to various parts of an application. User groups are not portable over different authentication schemes and are primarily useful when using Application Express Account Credentials authentication. To edit an existing user group, select it. Click **Create** to create a new group." Below this, there are sections for "Tasks" and "Change My Password".

At the top right of the main content area, there are buttons for "View Dashboard" and "Create User Group >".

Создадим вторую группу пользователей (USER)

The screenshot shows the Oracle Application Express interface for creating a user group. The browser address bar indicates the URL: `https://apex.oracle.com/pls/apex/f?p=4350:54:15089337183797::NO:54::`. The page title is "Create/Edit User Group".

The main content area is titled "User Groups" and includes a "Cancel" button and a "Create Group" button. Below this is a tabbed interface with "Show All", "Group Details", and "Group Grants" tabs. The "Group Details" tab is active, showing the following fields:

- Group Name:** USER
- Description:** группа простых пользователей

The description field has a character count of "28 of 4000".

The right sidebar contains the following text:

User Groups

You can create user groups to restrict access to various parts of an application. However, user groups are not portable over different authentication schemes. User groups are primarily useful when using Application Express workspace authentication.

To create a new user group, identify the group name and an optional description.

Две группы созданы...

The screenshot displays the Oracle Application Express interface for managing users and groups. The browser address bar shows the URL: <https://apex.oracle.com/pls/apex/f?p=4350:53:15089337183797::NO::>. The page title is "Manage Users and Groups".

The navigation menu includes: ORACLE Application Express, Application Builder, SQL Workshop, Team Development, and Packaged Apps. The main content area has tabs for "Users", "Groups", and "Group Assignments". The "Groups" tab is active, showing a search bar, a "Go" button, and a "Create User Group" button. Below the search bar, two user groups are listed: "ADMIN" and "USER".

On the right side, there is a "User Groups" sidebar with the following text: "User groups enable you to restrict access to various parts of an application. User groups are not portable over different authentication schemes and are primarily useful when using Application Express Account Credentials authentication. To edit an existing user group, select it. Click **Create** to create a new group." Below this, there is a "Tasks" section with a link for "Change My Password".

Начнем создавать пользователей

ORACLE Application Express Application Builder SQL Workshop Team Development Packaged Apps

Manage Users and Groups > Create User

Create User Cancel Create and Create Another **Create User**

Show All User Identification Account Privileges Password Group Assignments

User Identification

* Username ADMIN_1 ?

* Email Address N.Grafeeva@spbu.ru x ?

First Name ?

Last Name ?

Description ?

Default Date Format ?

Account Privileges

Default Schema GRAFEeva ?

Accessible Schemas (null for all) USER ?

Users

Use this page to control access for Application Express application developers, workspace administrators and end users.

Developers can create and edit applications as well as create and modify database objects.

Workspace administrators can additionally create and edit user accounts, manage groups, manage development services.

End users have no development privileges and are defined to provide access control to applications that do not use an external authentication scheme.

Вот список созданных пользователей

ORACLE Application Express Application Builder SQL Workshop Team Development Packaged Apps

Manage Users and Groups

✓ User created.

Users Groups Group Assignments

Search Go Actions Create User

User	Email	Account Type	Locked	Builder Last Login	Created
ADMIN_1	N.Grafeeva@spbu.ru	End User	No	-	95 seconds ago
N.GRAFEeva@SPBU.RU	N.Grafeeva@spbu.ru	Workspace Administrator	No	16 minutes ago	4 weeks ago
USER_1	N.Grafeeva@spbu.ru	End User	No	-	1 seconds ago

1 - 3

Manage Users

Use this page to control access for Application Express workspace administrators, application developers, and end users.

Workspace administrators can create and modify applications and database objects as well as manage user accounts, groups, and development services.

Developers can create and modify applications and database objects.

End users have no development privileges and can only access applications that do not use an external authentication scheme.

Tasks

- Change My Password
- About Application Express
- Monitor Activity
- Manage Service

Вы хотите сохранить пароль на oracle.com? Подробнее Да Не для этого сайта

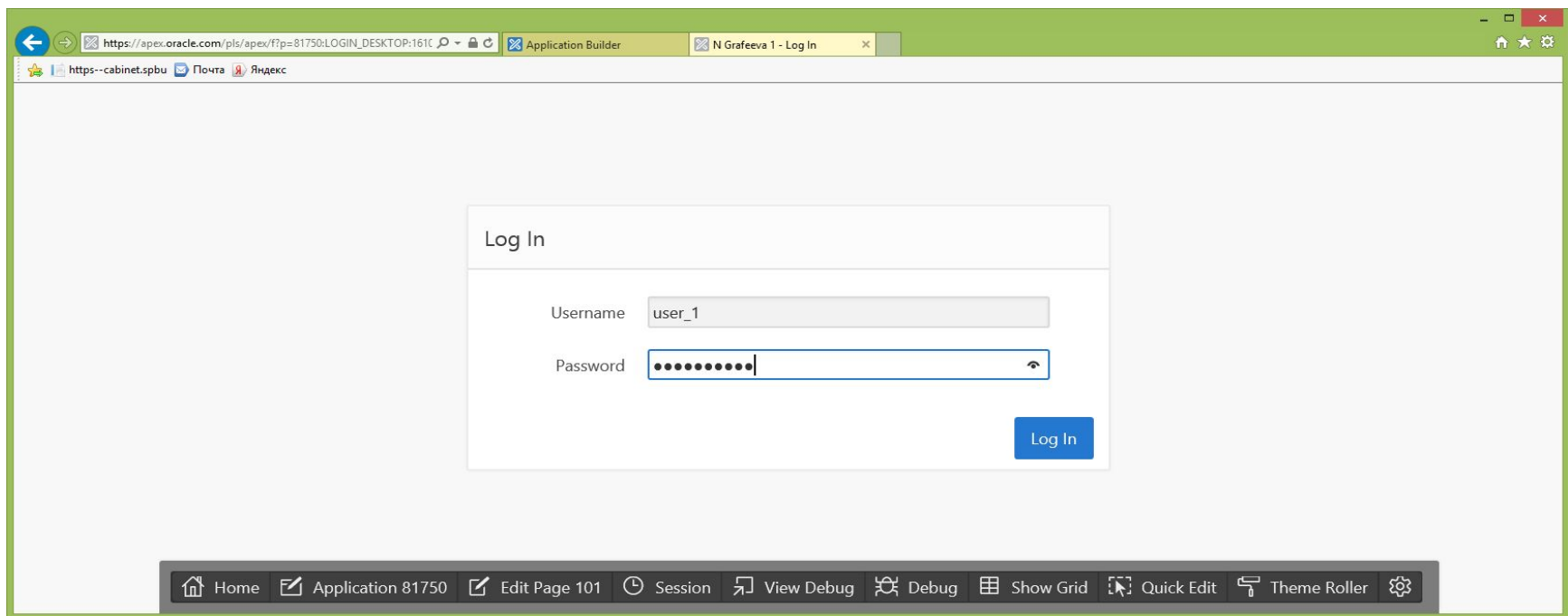
На пользователей, приписанных к группам, можно посмотреть через представление

APEX_WORKSPACE_GROUP_USERS

The screenshot shows the Oracle APEX SQL Workshop interface. The browser address bar displays the URL: `https://apex.oracle.com/pls/apex/?p=4500:1003:112809935745286`. The page title is "SQL Commands". The navigation bar includes "ORACLE Application Express", "Application Builder", "SQL Workshop", "Team Development", and "Packaged Apps". The "Schema" dropdown is set to "GRAFEEVA". The "Rows" dropdown is set to "10". The "SQL Commands" area contains the query: `select * from apex_workspace_group_users`. The "Run" button is highlighted. Below the query, the "Results" tab is active, showing a table with 2 rows and 5 columns: `WORKSPACE_ID`, `WORKSPACE_NAME`, `WORKSPACE_DISPLAY_NAME`, `USER_NAME`, and `GROUP_NAME`. The first row shows `12443959264218247255`, `GRAFEEVA`, `GRAFEEVA`, `ADMIN_1`, and `ADMIN`. The second row shows `12443959264218247255`, `GRAFEEVA`, `GRAFEEVA`, `USER_1`, and `USER`. The footer includes the user `n.grafeeva@spbu.ru`, the name `grafeeva`, the language `en`, the copyright notice "Copyright © 1999, 2015, Oracle. All rights reserved.", and the version "Application Express 5.0.1.00.06".





WORKSPACE_ID	WORKSPACE_NAME	WORKSPACE_DISPLAY_NAME	USER_NAME	GROUP_NAME
12443959264218247255	GRAFEEVA	GRAFEEVA	ADMIN_1	ADMIN
12443959264218247255	GRAFEEVA	GRAFEEVA	USER_1	USER

Убедимся, что созданных пользователей пустят в приложение со схемой аутентификации APEX_AUTH



Пустили...

The screenshot displays an Oracle APEX application interface. The browser address bar shows the URL: `https://apex.oracle.com/pls/apex/f?p=81750:2:16100307404148::...`. The application header includes the user name "N Grafeva 1" and a "Log Out" link. The left sidebar contains navigation links for "Dept" and "Home". The main content area is titled "Dept" and features a search bar with a "Go" button and an "Actions" dropdown menu. Below the search bar is a table with the following data:

	Deptno	Dname	Loc
	10	ACCOUNTING	NEW YORK
	20	RESEARCH	DALLAS
	30	SALES	CHICAGO
	40	OPERATIONS	BOSTON

At the bottom right of the table, the pagination indicator "1 - 4" is visible. The application footer contains various utility icons and labels: Home, Application 81750, Edit Page 2, Session, View Debug, Debug, Show Grid, Quick Edit, Theme Roller, and a settings gear icon.

Теперь займемся вопросами
авторизации

Создадим схемы авторизации (Shared Components -> Security->Authorization Schemas)

The screenshot shows the Oracle Application Express interface. The browser address bar displays the URL: <https://apex.oracle.com/pls/apex/f?p=4000:4070:112809935745286::>. The page title is "Authorization Schemas". The breadcrumb navigation shows "Application 81750 > Shared Components > Authorization Schemas". The main content area is empty, displaying "No data found." with a magnifying glass icon. A right-hand sidebar provides information about Authorization Schemas:

Authorization Schemas

You manage authorization for applications, pages, and most other components using Authorization Schemas.

You associate an Authorization Scheme with an application, page, or other component on the component's attributes page.

Authorization Schemas are pass/fail checks. Common Authorization Scheme types include Exists, Not Exists SQL Queries, and PL/SQL Function Returning Boolean.

To enhance performance, the success or failure of an Authorization Scheme is cached on a per session or per page view basis.

At the bottom of the page, the footer includes the user email n.grafeeva@spbu.ru, the name [grafeeva](#), the language [en](#), the copyright notice "Copyright © 1999, 2015, Oracle. All rights reserved.", and the version "Application Express 5.0.1.00.06".

С чистого листа (from scratch)...

The screenshot shows the Oracle APEX interface with a modal dialog titled "Create Authorization Scheme". The dialog is currently on the "Creation Method" step, indicated by a blue dot on a progress bar. The text inside the dialog reads: "Specify how you want to create your authorization scheme. You can create an authorization scheme from scratch or copy it from another application. If you copy an authorization scheme, you can modify later." Below this text, there are two radio button options: "From Scratch" (which is selected) and "As a Copy of an Existing Authorization Scheme". At the bottom of the dialog, there are "Cancel" and "Next >" buttons. The background shows the Oracle APEX application builder interface with various tabs like "Application Builder", "SQL Workshop", "Team Development", and "Packaged Apps". The browser address bar shows the URL: "https://apex.oracle.com/pls/apex/f?p=4000:4070:112809935745286:::".

ORACLE Application Express

Application Builder SQL Workshop Team Development Packaged Apps

Create Authorization Scheme

Creation Method

Specify how you want to create your authorization scheme. You can create an authorization scheme from scratch or copy it from another application. If you copy an authorization scheme, you can modify later.

Create Authorization Scheme: **From Scratch** As a Copy of an Existing Authorization Scheme

Cancel Next >

В основе схемы авторизации – SQL запрос с использованием системной переменной :APP_USER и представления APEX_WORKSPACE_GROUP_USERS

Application: **81750 N Grafeeva 1** ?

* Name: ADMIN_SCHEME ?

* Scheme Type: Exists SQL Query ?

* SQL Query: SELECT NULL
FROM APEX_WORKSPACE_GROUP_USERS
WHERE USER_NAME = :APP_USER
AND GROUP_NAME = 'ADMIN' ?

* Identify error message displayed when scheme violated: У вас нет прав для просмотра этой страницы!

Cancel Create Authorization Scheme

Создадим еще одну схему авторизации

The screenshot shows the Oracle APEX interface with a modal dialog titled "Create Authorization Scheme". The dialog is currently on the "Creation Method" step, indicated by a blue dot on a progress bar. The text inside the dialog reads: "Specify how you want to create your authorization scheme. You can create an authorization scheme from scratch or copy it from another application. If you copy an authorization scheme, you can modify later." Below this text, there are two radio button options: "From Scratch" (which is selected) and "As a Copy of an Existing Authorization Scheme". At the bottom of the dialog, there are "Cancel" and "Next >" buttons. The background shows the Oracle APEX application builder interface with the "Authorization Schemes" tab selected in the left sidebar. The browser address bar shows the URL "https://apex.oracle.com/pls/apex/www_flow.accept".

Назовем ее USER_SCHEME

The screenshot shows the Oracle APEX interface with a modal dialog titled "Create Authorization Scheme". The dialog is in the "Details" tab and contains the following information:

- Application: 81750 N Grafeeva 1
- Name: USER_SCHEME
- Scheme Type: Exists SQL Query
- SQL Query:

```
SELECT NULL
FROM APEX_WORKSPACE_GROUP_USERS
WHERE USER_NAME = :APP_USER
AND GROUP_NAME = 'USER'
```

At the bottom of the dialog, there is a "Create Authorization Scheme" button and a "Cancel" button. A message at the bottom of the dialog reads: "У Вас нет прав для просмотра этой страницы!".

Вот полный список схем авторизации

Application 81750 > Shared Components > Authorization Schemes

Authorization Schemes Subscription by Component Utilization History

Search: Go

Name	Type	Caching	Subscribed From	Subscribers	Updated
ADMIN_SCHEME	Exists SQL Query	Once per session			5 minutes ago
USER_SCHEME	Exists SQL Query	Once per session			2 seconds ago

1 - 2

Authorization Schemes

You manage authorization for applications, pages, and most other components using Authorization Schemes.

You associate an Authorization Scheme with an application, page, or other component on the component's attributes page.

Authorization Schemes are pass/fail checks. Common Authorization Scheme types include Exists, Not Exists SQL Queries, and PL/SQL Function Returning Boolean.

To enhance performance, the success or failure of an Authorization Scheme is cached on a per session or per page view basis.

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Установим схемы авторизации для страниц приложения

The screenshot displays the Oracle APEX Page Designer interface for configuring a page. The browser address bar shows the URL: `https://apex.oracle.com/pls/apex/f?p=4000-4500:112809935745286::`. The application is identified as "Application 81750" and the page is "Page Designer".

The interface is divided into several sections:

- Rendering:** Shows the page structure with a tree view on the left. The selected page is "Page 2: Dept". The tree includes "Pre-Rendering", "Regions", "Breadcrumb Bar", "Content Body", and "Post-Rendering".
- Grid Layout:** Displays the page layout with regions: "PAGE HEADER", "PAGE NAVIGATION", "BREADCRUMB BAR", "Breadcrumbs", "ITEMS", "REGION CONTENT", and "SUB REGIONS".
- Regions:** A palette of components including Breadcrumb, Calendar, Chart, Classic Report, Classic Report, Help Text, Interactive Report, and Legacy Calendar.
- Page Properties:** A panel on the right for configuring the page's attributes, including:
 - Page HTML Body Attribute:** A text input field.
 - Header and Footer:** Fields for "Header Text" and "Footer Text".
 - Read Only:** A "Type" dropdown menu.
 - Security:** Fields for "Authorization Scheme" (set to "ADMIN_SCHEM") and "Authentication" (set to "Page Requires Authent").

A green notification banner at the top right indicates "Changes saved".